THE HARRIMAN SYSTEM

SOUTHERN PACIFIC

J. C. WILSON,
MILLS BUILDING,
SAN FRANCISCO, CAL.
CORRESPONDENTS OF
HARRIS, WINTHROP & CO.
25 PINE STREET
NEW YORK
3 THE ROOKERY
CHICAGO

THE HARRIMAN SYSTEM

(SOUTHERN PACIFIC)

A REVIEW OF THE REMARKABLE DEVELOPMENT OF THESE RAILROADS TOGETHER WITH THE TERRITORY THEY PENETRATE

WITH PARTICULAR REFERENCE TO THE SOUTHERN PACIFIC COMPANY .....

25 PINE STREET, NEW YORK
3 THE ROOKERY, CHICAGO
205 ELLICOTT SQUARE, BUFFALO, N. Y.

SOUTHERN PACIFIC COMPANY.

Only a degree less conspicuous than the rise of Union Pacific has been the tremendous advance of its ally, the Southern Pacific division of the Harriman System. This was foretold when the Southern Pacific property was acquired by the Harriman interests in 1901, but it is doubtful if the most far-sighted realized at that time the vast strides that would be made in the upbuilding of the property within the ensuing decade. Nor was anyone, with the possible exception of Mr. Harriman himself, able to judge of the wonderful possibilities of the territory that the Southern Pacific serves.

From its northwestern terminus at Portland, the Southern Pacific system sweeps through California and then eastward through Arizona, a corner of New Mexico, and the breadth of Texas to New Orleans—this without taking into account the very important lines from Salt Lake City to San Francisco, and the Mexican lines now being rapidly extended. From Galveston and New Orleans run the magnificent fleet of Southern Pacific steamers to New York and other ports. Including the lines operated and owned which make up the Southern Pacific system proper, we have here 9,834 miles of main track, 220 miles of second track, 3,050 miles of sidings, 10 miles of ferries, and 4,895 miles of water lines, the greatest rail transportation system in existence with the single exception of the Pennsylvania.

In seven years of Harriman management, a surplus too small for the payment of dividends was turned into a surplus of nearly $15,000,000, after payment of $13,157,000 in dividends. The expenditure of $146,000,000 in improvements of the Southern Pacific lines under the Harriman regime is a fact that staggers the imagination. The practical gain from these

expenditures is shown in the fact that the Southern Pacific last year carried one mile nearly 1,500,000,000 tons of freight *more* than it carried in 1901. This, of course, would have been an entirely impossible feat unless the money laid out in improvements had been spent wisely, as well as freely, and had been accompanied by a high order of intelligence in management and operation.

There is no more impressive demonstration of this than the figures for the seven months ending January 31st of this year. For these months, although gross revenue as compared to 1908 decreased by $6,000,000, the revenue over operating expenses and taxes actually increased nearly $4,000,000. There is no better test of efficiency of management than this. The actual figures are as follows:—

Seven Months, Ending January 31.

	1909	1908	Increase	Decrease
Average miles of road operated.	9,598.03	9,472.93	125.10	.....
Gross revenue..	$71,583,759.56	$77,716,778.93	.....	$6,133,019.37
Operating expenses	44,299,479.03	54,198,191.96	.....	9,898,712.93
Taxes	2,126,284.12	2,141,904.76	.....	15,620.64
Total expenses and taxes	46,425,763.15	56,340,096.72	.....	9,914,333.57
Revenue over operating expenses and taxes	25,157,996.41	21,376,682.21	3,781,314.20	.....

As to the future possibilities of Southern Pacific, the point is long passed when there can be any doubt as to the worth of the property as now equipped and operated. That may be taken as a demonstrated fact. The factor remaining to be realized is the future of the territory traversed by the Southern Pacific lines.

In the minds of many, a large part of the Southern Pacific *territory exists merely* as a mental vision of semi-arid waste,

sparsely populated and largely undeveloped. This, to a large extent, was a fact in the days of Huntington, but it is not true of this country in the Harriman era.

Irrigation is changing vast areas within its territory; the cattle man is giving way to the farmer—one ranch becoming the homes of hundreds of settlers. Where formerly the traffic of the Southern Pacific was largely composed of low-class business, the percentage of freight of higher grades is steadily increasing. It is, furthermore, a mistake to suppose that Southern Pacific's hold upon California traffic can be seriously disturbed by the entrance of rival lines. The Southern Pacific is there, and has been there for a generation. Its lines permeate the industries of the State; its advantages in San Francisco are comparable and probably superior to the advantages of the Pennsylvania in Pittsburg.

As little danger, if any, may be anticipated from the outcome of pending litigation whereby it is sought to destroy the relation now existing between the Union Pacific and Southern Pacific Systems, the value of the Southern Pacific's right of way, equipment and priority in its field, and the advance and intensification of its traffic, cannot be destroyed or by any means taken away from Southern Pacific shareholders. The worst that could happen would be less efficient management and less advantageous traffic arrangements than those now existing. But even these possibilities are hardly to be regarded as dangers sufficiently imminent to be considered by the most careful investor.

How great a factor is irrigation in the transformation of Southern Pacific territory is shown by an examination of the Government's work in this field, and without taking account of many private projects.

In the neighborhood of Yuma, on the Colorado River, 100,000 acres, partly in Arizona and partly in California, will

be served by the canals, on which rapid progress is being made. Profitable cultivation of this soil has heretofore been impossible owing to the destructive floods of the Gila River. Now this section is ready for the settler. In the same neighborhood the lands saved from destruction by the Southern Pacific's success in closing the breach in the Colorado are yielding phenomenal crops.

With Phoenix, Arizona, as a centre, another vast irrigation work covering 200,000 acres is being carried out. Here, also, is the climate of oranges and other fruits of many kinds, and the far-sighted settlers who are taking up land in this region come into a well organized and highly developed community.

On the Truckee-Carson project in Nevada, the Government is spending $9,000,000 on the reclamation of 350,000 acres. This is on the Ogden route of the Southern Pacific, from which a branch line between Hazen and Fallon has been built diagonally across the newly irrigated area. Further north, on the border line between California and Oregon, is the Klamath project through which the Southern Pacific is building the line which will eventually run from Weed, California, to Natron, Oregon, and become the main line of the road in this territory in place of the present Shasta route. Nearly 250,000 acres of a fertile soil will be affected by the irrigation work now well under way here.

San Joaquin County, California, in 1900, had 1966 farms, averaging 440 acres each. To-day the average is 208 acres, and where there were 98 farms of less than ten acres eight years ago, there are now 362 farms of this size, and 689 farms of less than twenty acres.

This tells the secret of the increase that has come about in Southern Pacific traffic—in addition to the steady industrial *advance of* the State outside of agriculture.

THE HARRIMAN SYSTEM

Here in a locality where a few years ago farming was on a vast scale, there are now 127 profitable farms of less than three acres each, and 362 of less than ten acres. This change, due principally to irrigation and the subdivision of farming lands into small tracts, has brought about an era of intensified and diversified agriculture, resulting in much lighter land values, more valuable products, and amounting to an insurance against general crop failures.

This change to small holdings also has the important result of multiplying settlers, who add enormously to the freight and passenger traffic of the lines on which they live. California has received as many as 10,000 colonists in a single month.

If the improvements carried out by the Southern Pacific at San Francisco were located in the East, as much would be heard about them as we hear of the New York tunnels. Through the barrier of hills that have stood in the way of San Francisco's southward expansion have been built five tunnels and 12,000 feet of trestle that will about double the area now available for industrial and residential purposes.

Here, as elsewhere, the purpose is to increase the railroad's capacity to handle traffic. The aim was to avoid the windings of the Coast line northwestward to Colona and the series of curves eastward through Ocean View to the city suburbs. This has been done at an immense cost to meet traffic requirements. Incidentally, there is opened for development an area at least as extensive as that now in use for industrial purposes.

At Visitacion Point the Southern Pacific is constructing a "hump yard" that will enable it to distribute much more efficiently the vast volume of freight handled here. In addition to the hump yard, located on 140 acres of ground where once was Visitacion Bay, the Company is providing complete facilities for receiving, classifying, shipping and storing freight.

THE HARRIMAN SYSTEM

The electrification of the Southern Pacific's Oakland and Alameda suburban lines is an undertaking comparing in extent to the electrifying of the New York Central's terminal district in New York. After the fire and earthquake, the Company's Bay ferries carried 2,000,000 passengers a month, or almost double the average before the April disaster. Electrifying the connecting shore lines seemed to be the only solution of the problem of transporting this enormous number of people, and the work will be pushed to completion as rapidly as possible.

Electricity will also be the solution of the problem of how to improve the crossing of the Sierras.

North of San Francisco, the most important improvement is the new line begun at Natron and running south to meet the California North Eastern line at Klamath Falls. These two roads will give the Southern Pacific an entirely new route for half the distance between San Francisco and Portland, save forty miles in length of haul, and avoid the killing grades of the present Shasta route. This is only one of many improvements that must be made to handle traffic economically and efficiently under present conditions.

By improvements on the line across the Sierras, the Southern Pacific has theoretically increased by 50 per cent the efficiency of its freight service across the mountains by additional sidings, while the great freight terminal at Roseville, California, further facilitates the handling of transcontinental traffic.

The immediate effect of these improvements is shown in the fact that the capacity of trains across the mountains has been increased from 30 to 45 cars, and the likelihood of another congestion of transcontinental freight has been done *away* with.

THE HARRIMAN SYSTEM

The great terminal at Roseville will affect the traffic of practically all the Pacific Coast. It will have a bearing upon the transcontinental traffic that goes across the Sierras to Ogden and the traffic that parallels the Pacific Ocean from Los Angeles to Portland. The Roseville yard is four miles in length. The receiving, departure and classification tracks, where the greatest volume of work will be done, comprise 27 miles. There are three miles of repair tracks, and the remainder are storage and warehouse tracks and industry spurs.

One more Southern Pacific improvement should be mentioned among the examples of those undertakings that count for the efficiency of the system and indicate progress toward even better conditions of transportation than now exist on its lines. This is the extension of the M. L. & T. railroad from Lafayette to Baton Rouge. When completed this line will form a short route across the State for through freight shipped from New York and the East, which now moves by way of New Orleans. Although the line is only 53 miles long, by cutting out the long detour southward to New Orleans it saves 180 miles, resulting in a great economy of cost and time on westbound shipments.

Although not strictly within Southern Pacific territory, the building of the Oregon and Washington railroad can not be overlooked in an examination of the position of this system. The completion of this line from Portland to Seattle and Tacoma means that Puget Sound instead of Portland will be the future terminus of the Southern Pacific. The road has been laid out especially for the handling of fast and heavy traffic over the two hundred miles that separate Puget Sound and the Columbia River.

Into Seattle the Oregon and Washington will enter by a tunnel more than a mile long to avoid the congestion of the water-front streets. For different reasons, and after trying

various routes to avoid the rises of the Tacoma table-land that any road from the south must cross or climb, the decision of the Harriman engineers was not to climb at all but to go under the city by means of a tunnel nearly nine thousand feet long. The effect of this extension of the Harriman lines to Seattle is practically to double the shipping outlet of the Puget Sound region.

THE MEXICAN LINES.

On the Southern Pacific map two red lines drop downward from the southeastern corner of Arizona. One shows the completed Sonora railway from Benson, on the main line, to Guaymas, on the Gulf of California, and then southward to Culiacan. The other line shows the road under construction from Douglas, on the Mexican-Arizona border, to Corral, on the Sonora route, together with the branch from Nocozari. A further projected extension of the Sonora line will carry it from Culiacan through Mazatlan on the coast to Guadalajara.

Under the concession dating from 1905, the Southern Pacific has built 249 miles of railway in Mexico; 480 miles remain to be built by 1912. Under the Cananea, Yaqui River and Pacific concession, 283 miles of line were completed in 1908, leaving 498 miles to be built by 1914. If Mr. Harriman judged as wisely as to the future possibilities of these Mexican lines as he did concerning the future of Southern Pacific and Union Pacific, he has here an asset of great value, from which Southern Pacific cannot fail to benefit before many years.

Another Southern Pacific property that dips into Mexico is the Inter-California, running from Calexico to Paradones, Mexico. This is practically a continuation of the Southern Pacific's branch from Imperial Junction to Calexico. The road forms a curve fifty-four miles long, with the international *boundary as a* base, rejoining the Southern Pacific main line

near Yuma. The completion of this line is especially interesting for the reason that its existence and the service it affords was made possible only by the energy with which the Southern Pacific responded to the call upon it to dam the Colorado when its waters threatened the destruction of this section. It is now the scene of remarkable agricultural development, and for the Imperial Valley section is confidently prophesied a population of 100,000 people.

Additions to equipment have kept up with extensions and improvements of the roadway. The Southern Pacific spent for new equipment $39,850,712 from July, 1901, to the end of 1906. To this should be added its share of 14,173 freight cars, at a cost of $19,358,850, delivered in the past two years. All the box cars, 4,050, are 100,000 pounds capacity. Two hundred and twenty locomotives have been purchased, at an outlay of $4,200,000, to haul this new equipment and to take the place of engines that have outlived their usefulness. For the Pacific Coast fruit traffic alone, 6,600 refrigerator cars were provided.

In thirty years the locomotives on the Southern Pacific have increased 175,000 pounds in weight, that is, from 30,000 to 72,500, and now to 208,000 pounds. Tractive power has gone up from 11,600 pounds, or much less, to the maximum of 43,300 pounds for the heavy consolidated type of engine now in use upon these lines.

The comparison of old and new freight cars and passenger coaches show that an equally great increase in the size of rolling stock has been necessary to handle the ever-mounting volume of traffic. The capacity of the standard freight car is now 100,000 pounds, as compared to the 30,000 pound cars of a few years ago. The seating capacity of coaches has increased from 32 to 70, and the weight of the coaches, which is the gauge of safety, has been multiplied four times, reducing vibration and providing more room and greater comfort.

THE HARRIMAN SYSTEM

The extension of automatic block signals on the Harriman lines has been carried out on an unprecedented scale. The various companies comprising the Southern Pacific system have 4,700 miles of track controlled and protected by automatic signals. The entire line of the Southern Pacific from Portland, by way of San Francisco and Los Angeles, to Banning, in Southern California, a continuous stretch of 2,354 miles, is fully protected with automatic signals. This is the longest continuous stretch of track so equipped on any railroad in the world.

The result of good management, of line improvements, and equipment additions, has been to make the Union Pacific and Southern Pacific the holders of the high record in respect to miles run per car per year. For all railroads, the loaded mile run is 5,820. The Southern Pacific, as against these figures, makes a record of 7,312 miles.

Other elements than good equipment and efficiency go into the making of this record. More impressive still is the record of Southern Pacific train load and car load. Beginning with 1897, the first year for which average train load is given separately for revenue train mile and locomotive mile, the showing is as follows:

1897	Average	train	load	per revenue train mile....	222
	"	"	"	per locomotive mile.....	190
1898	"	"	"	per revenue train mile....	257.5
	"	"	"	per locomotive mile	221
1900	"	"	"	per revenue train mile....	299
	"	"	"	per locomotive mile	242
1902	"	"	"	per revenue train mile....	319
	"	"	"	per locomotive mile	267.5
1904	"	"	"	per revenue train mile....	332
	"	"	"	per locomotive mile	280
1906	"	"	"	per revenue train mile....	392
	"	"	"	per locomotive mile	331
1908	"	"	"	per revenue train mile....	414
	"	"	"	per locomotive mile	351

An examination of these figures affords a further revelation of the increased capacity of the Southern Pacific to handle its traffic efficiently:

1900	Tons per loaded car				17	Ton capacity of cars			24
1902	"	"	"	"	18	"	"	" "	27
1904	"	"	"	"	19	"	"	" "	30.5
1906	"	"	"	"	19.5	"	"	" "	33
1908	"	"	"	"	21.5	"	"	" "	36

In the diagrams, illustrating in a graphic way the advance of Southern Pacific, the line of march shows only slight progress up to the year 1901. From this point it soars upward. Thus the line showing increase in gross transportation revenue wavers below 100 per cent up to 1901, and then darts upward to 312 per cent increase for 1907 over 1885, with a slight recession to 306.16 for 1908.

In the fourteen years prior to 1900, Southern Pacific freight and passenger traffic advanced only haltingly, with not a few backward turns. The record since the year mentioned is therefore all the more impressive:

Per cent of increase 1908 over 1900:

Revenue from passengers	249	per cent increase
Passengers carried one mile	260	
Car miles	256	
Locomotive miles	221	
Revenue from freight	190	
Tons revenue freight carried one mile	290	
Car miles	143	
Locomotive miles	55	

Only the most significant features of the Southern Pacific's progress and future prospects have been touched upon in the preceding pages, but enough has been brought out to prove

that the property is only beginning to realize upon the investment of money and brains that has been put into it. That the property in the face of a sudden fall in gross earnings could actually increase its net returns, illustrates not only good management—it is a forecast of greater earnings in the future. Improvements will not stop; they are still in progress, but it is no longer necessary to pour back into the property the millions upon millions that have brought Southern Pacific to its present position. A much larger share of these millions can now go to its shareholders.

The results of last year's operations are shown in the following table. Proof of improvement is shown in the preceding report for the seven months ending January 31, 1909. The effect of the general business depression which set in during the fall of 1907 did not reduce the gross revenues of the Company to an aggregate below that for the corresponding months of the preceding year until January, 1908. From that time to the close of the fiscal year, June 30, there was a decrease of $9,892,481.80. As there was an increase of $6,975,042.44 in the gross revenues during the first half-year, there was a shrinkage in the year's gross revenues of only $2,917,439.36, or 2.31 per cent:

	Increase	Decrease	Per Cent.
Average miles of rail lines operated	105.02	.....	1.12
Gross operated revenues and revenues from outside operations....	.....	$2,917,439.36	2.31
Operating expenses and expenses of outside operations.....	$4,397,719.78	.....	5.48
Taxes	1,053,638.99	.....	36.38
Revenues over expenses and taxes..	.....	8,368,798.13	19.45
Income other than from transportation operations	.....	276,103.64	6.44
Total receipts	.....	8,644,901.77	18.27
Fixed charges	.....	450,906.00	2.54
Other charges	.....	388,875.36	20.48
Surplus over fixed and other charges	.....	7,805,120.41	28.18

Results of Operations in 1907 and 1908.

	1908.	1907.	Increase.	Decrease.	Per Cent.
Average miles of rail lines operated	9,505.61	9,400.59	105.02	.....	1.12
Revenues—					
Passenger, including extra baggage	$35,647,534 18	$33,551,888 82	$2,095,645 36	.....	6.25
Mails and express	4,931,373 25	4,907,899 76	23,473 49	.....	.48
Freight	71,124,459 79	75,710,299 19	.....	$4,585,839 40	6.06
Switching, rentals, and all other sources	1,842,199 30	1,460,088 45	382,110 85	.....	26.17
Total rail lines	$113,545,566 52	$115,630,176 22	.....	$2,084,609 70	1.80
Outside operations—revenues	9,731,364 25	10,564,183 91	.....	832,829 66	7.88
Total revenues	$123,276,920 77	$126,194,360 13	.....	$2,917,439 36	2.31
Operating Expenses—					
Maintenance of way and structure	$16,936,161 78	$16,011,358 02	$924,803 76	.....	5.78
Maintenance of equipment	14,927,084 90	14,884,062 69	43,022 21	.....	.29
Conducting transportation	40,484,550 06	36,895,635 80	3,588,914 26	.....	9.73
General expenses	3,657,697 31	3,344,204 86	313,492 45	.....	9.37
Total rail lines	$76,005,494 05	$71,135,261 37	$4,870,232 68	.....	6.85
Outside operations—expenses	8,657,557 84	9,130,070 74	.....	$472,512 90	5.17
Total expenses	$84,663,051 89	$80,265,332 11	$4,397,719 78	.....	5.48
Gross revenues over total expenses	$38,613,868 88	$45,929,028 02	.....	$7,315,159 14	15.93
Passenger Traffic—					
Revenue passengers carried	41,393,734	41,860,915	.....	467,181	1.12
Revenue passengers carried one mile	1,640,036,373	1,587,837,350	52,199,023	.....	3.29
Revenue from passenger trains per mile of road	$4,175 84	$3,992 77	$183 07	.....	4.59
Revenue from passenger trains per revenue train mile	$1 94	$1 85	$0 09	.....	4.87
Average revenue per passenger per mile	2.174 cents	2.113 cents	.061 cent	.....	2.89
Average distance carried	39.62 miles	37.93 miles	1.69 miles	.....	4.46
Freight Traffic (Way-Bill Tonnage)—					
Tons of revenue and company freight carried	28,998,913	29,871,901	.....	872,988	2.92
Tons of revenue and company freight carried one mile	7,845,002,515	7,995,891,714	.....	150,889,199	1.89
Ton miles per mile of road—all freight	824,251	849,424	.....	25,173	2.96
Revenue from freight per mile of road	$7,333 27	$7,893 68	.....	$560 41	7.10
Revenue from freight per revenue train mile	$3 59	$3 53	$0.06	.....	1.70
Average receipts per ton per mile—revenue freight	1.097 cent	1.098 cent	.....	.001 cents	
Average distance carried—all freight	270.53 miles	267.67 miles	2.86 miles	.....	1.07

A Record of Progress.

Years	Miles of Road Operated	Gross receipts and Income	Surplus after payment of Oper. Exp.	Fixed Charges	Surplus after Payment of Fixed Charges	Dividends	Surplus After Payment of Dividends
1898	7,722.78	$57,975,593	$21,357,537	$15,431,079	$5,926,458	.....	$5,926,458
1899	7,842.74	62,004,669	21,598,898	16,392,672	5,206,226	.....	5,206,226
1900	8,213.19	70,431,444	24,036,516	17,934,550	6,101,966	.....	6,101,966
1901	8,654.97	79,345,104	28,466,090	18,061,853	10,404,237	.....	10,404,237
1902	8,757.43	85,742,326	28,961,824	18,190,823	10,770,501	.....	10,770,501
1903	8,842.01	90,683,436	28,271,636	19,220,040	9,051,596	.....	9,051,596
1904	9,024.59	95,522,992	29,990,645	21,112,162	8,878,483	.....	8,878,483
1905	9,137.85	98,140,582	32,167,146	21,007,018	11,160,127	$2,769,431	8,390,696
1906	9,191.56	108,957,221	38,372,032	19,179,385	19,192,647	7,716,125	11,476,521
1907	9,400.59	129,900,404	46,783,102	19,084,509	27,698,593	13,157,013	14,541,580
1908	9,505.61	127,686,401	38,673,209	17,269,614.27	19,893,472.81	17,112,726.94	2,761,745.64

HARRIS, WINTHROP & CO.

25 PINE STREET
NEW YORK

3 THE ROOKERY
CHICAGO

STOCKS, BONDS, GRAIN AND COTTON

PRIVATE WIRES
TO CORRESPONDENTS IN PRINCIPAL CITIES

MEMBERS

NEW YORK STOCK EXCHANGE
CHICAGO BOARD OF TRADE
CHICAGO STOCK EXCHANGE
NEW YORK COTTON EXCHANGE

JOHN F. HARRIS
HENRY ROGERS WINTHROP
THEODORE E. CUNNINGHAM
CHARLES G. SMITH
WOODWARD BABCOCK
HUGH BLYTHE
GEORGE A. McCLELLAN
General Partners

JULIEN A. RIPLEY
Special Partner

VREELAND ADVERTISING PRESS
113-117 WEST 31st ST. N. Y.